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IMPROVING MATHEMATICS LEARNING IN UNDERSTANDING FLAT BUILDINGS THROUGH PICTURE MEDIA FOR STUDENTS WITH MODERATE TUNAGRAHITA CLASS IV SDLB IN SLB NEGERI 2 CENTRA PK-PLK CIMAHI CITY

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Abstract

Moderate tunagrahita children are children who have limitations in intellectual function (IQ). This study aims to describe the process of learning mathematics in class IV SDLB with moderate impairment in terms of planning and implementation of learning in the classroom. Learning to recognize flat shapes in moderate tunagrahita children is expected to make it easier for students to learn, add insight, inspire, develop various character values, increase knowledge and develop student abilities. This research method uses descriptive qualitative research methods because the main data sources of this research are observation and documentation. The results of this study are expected that math learning can add information or insight for teachers so that they can make learning better and achieve maximum. From the results of the study, the researcher proposes recommendations / suggestions for teachers to provide selection of learning materials that are in accordance with the needs of children so that students can understand learning materials easily. The success in this Classroom Action Research (PTK) is seen in each cycle, namely in Cycle I by 60% and increased in Cycle II to 100%..

Keywords: Image media, flat building concepts, grade IV SDLB students with moderate impairment

Abstrak

Anak tunagrahita sedang adalah anak yang mempunyai keterbatasan dalam fungsi intelektual (IQ). Penelitian ini bertujuan untuk mendeskripsikan proses pembelajaran matematika di kelas IV SDLB tunagrahita sedang ditinjau dari perencanaan dan pelaksanaan pembelajaran di kelas. Pembelajaran pemahaman mengenal bangun datar pada anak tunagrahita sedang diharapkan mempermudah siswa dalam belajar, penambahan wawasan, memberi inspirasi, mengembangkan berbagai nilai karakter, menambah pengetahuan dan mengembangkan kemampuan siswa. Metode penelitian ini menggunakan metode penelitian kualitatif bersifat deskriptif karena sumber data utama dari penelitian ini adalah observasi dan dokumentasi. Hasil penelitian ini diharapkan pembelajaran matematika dapat menambah informasi atau wawasan bagi guru sehingga dapat membuat pembelajaran menjadi lebih baik dan tercapai secara maksimal. Dari hasil penelitian, peneliti mengajukan rekomentasi / saran bagi guru untuk memberikan pemilihan materi pembelajaran yang sesuai dengan kebutuhan anak agar siswa dapat memahami materi pembelajaran dengan mudah. Keberhasilan dalam Penelitian Tindakan Kelas (PTK) ini terlihat di setiap siklusnya, yaitu di Siklus I sebesar 60 % dan meningkat di Siklus II menjadi 100 %.

Kata Kunci: Media gambar, konsep bangun datar, siswa kelas IV SDLB tunagrahita sedang

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INTRODUCTION

Observing education for students as students needs a pattern or solution that is appropriate and effective. The need for good learning materials for students makes the atmosphere of the teaching and learning process easy to understand, fun and effective in achieving maximum ability.

According to Darmawanti and Jannah, children with special needs are children who in the process of growth or development experience physical, mental intellectual, social or emotional abnormalities or deviations compared to other children, so they need special services. Due to delays in the development of intelligence, students with disabilities will experience various obstacles in an effort to meet these needs. (Al-lamri et al., 2006; Edy Surahman, 2017).

In fact, some of them may achieve more or less, depending on the severity of the child's obstacles and the attention given to them by their environment.

The fact that children with disabilities are children who have intelligence below the average of normal people and are less able to adapt to behavior during their development. (Firdausi, Y. N., Asikin, M., & Wuryanto, 2018) (Sari, 2017).

According to Somantri (2012), in general, tunagrahita children are grouped based on their level of intelligence, namely mild tunagrahita, moderate tunagrahita and severe tunagrahita.

For students with disabilities, learning mathematics is a bit of a difficult factor in understanding learning. With the existence of Classroom Action Research (PTK) in learning, teachers are expected to strive to find solutions and overcome problems of difficulty in learning so far in the classroom.

According to Maharani (2017), cognitive development aims to develop general knowledge abilities, concepts of shape, color, size, letters and number concepts. One of the shape concepts that children must master is flat shapes (geometry).

With identifying the shape of flat shapes, it can help children describe and also help children understand objects in the form of flat shapes in the surrounding environment.

Therefore, learning mathematics by recognizing the concept of flat shapes is very important because of access to successful learning while at school and researchers raise this issue through Classroom Action Research (PTK) with the title, "Improving Mathematics Learning in Understanding Flat Buildings Through Picture Media for Students with Moderate Tunagrahita Class IV SDLB in SLB Negeri 2 Centra PK-PLK Cimahi City".

METHOD

The research method that will be used in this study is classroom action research (ptk) or in the english language literature it is called classroom action research. Method (ptk) is research conducted by a teacher who is assisted by an observer in collecting information in learning practices that aim to improve and enhance learning.

The research design refers to the research design conducted by kemmis and mc. Taggart is a spiral model as shown in the image below:

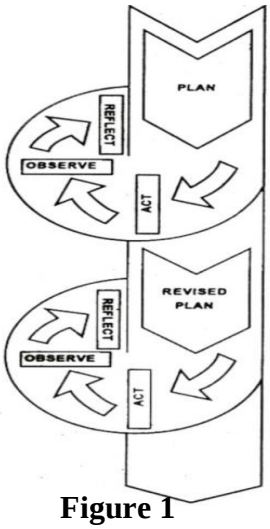


Figure 1
Spiral Model from Kemmis dan Taggart

From the picture above in planning Kemmis and Mc. Taggart uses a reflective spiral system which can be understood that the PTK flow begins with a plan, act, observe, reflect, and re-plan (Sugiyono, 2012, 2013)

Kemmis and Taggart explained in detail the stages of the action research they were carrying out. Based on the chart above referring to Kemmis and Taggart's opinion, in the planning box (plan), at the planning stage the researcher makes an action plan that will be carried out in the research process to be carried out, the action plan that will be carried out in research is research planning and learning planning. After the research plan has been carried out, the next stage is the action (act) which is started by providing learning steps in accordance with the conceptualized plan. In the observation stage (observe), when the implementation of the action took place the partner teacher as the research implementer was observed by the researcher and class IV teacher at SDN Kiaracondong based on the observation sheet that had been made by the researcher. Then in the reflection stage, based on the results of these observations, the researcher carries out a reflection or an action that will be carried out next. If the reflection results of the actions taken show the need for improvement, then the next action plan is not just repeating what has been done but continuing to take action until the problem can be solved optimally

A. Learning Mathematics in Understanding Flat Buildings

1. Mathematics

Mathematics is an activity in which there is an abstracting process from real experiences in everyday life, including activities of classifying, counting, measuring, designing buildings or tools, making patterns, counting, determining location, playing, explaining and so on (Rosidah, 2016: 2).

In the process of learning mathematics, abstract concepts are understood by students by being reinforced, so that they will be attached to their mindset and actions.

So it can be concluded that mathematics is a science that can help children understand objects in the form of flat shapes in the surrounding environment.

2. Purpose of learning math

The purpose of learning mathematics is to make students capable and skilled. In addition, learning mathematics can emphasize the structuring of reasoning in the application of mathematics. Solving problems that include the ability to understand problems and interpret the solutions obtained, having a ready appreciation of the use of mathematics in life, namely having curiosity, attention and interest in learning mathematics in problem solving.

In addition to the above learning objectives, according to Erman Suherman, et al (2003: 70) the purpose of teaching mathematics is that:

a. Students have abilities that can be utilized through math activities.
b. Students have mathematical knowledge as a provision for continuing to the next level of education.
c. Students have mathematical skills as an improvement and extension of elementary school mathematics to be used in everyday life.

B. Understanding Flat Buildings

According to Anas Sudjono (2011: 50), understanding is a person's ability to understand or comprehend something after something is known and remembered. In other words, understanding is knowing about something and being able to see it from various angles.

Concept understanding as the ability of students to explain concepts can be interpreted as students being able to re-express what has been communicated to them, such as recognizing flat shapes, namely geometric objects that lie on a flat plane bounded by straight or curved lines.

Understanding is one of the mathematical skills or proficiencies that are expected to be achieved in learning mathematics, namely by showing mathematical concepts that are not easy to understand. can be learned, explain the relationship between concepts and apply in everyday life.Pengertian bangun datar

Flat shapes are geometric shapes located on a flat plane that has two dimensions and has two elements, namely length and width. (Firmanawaty, 2003).

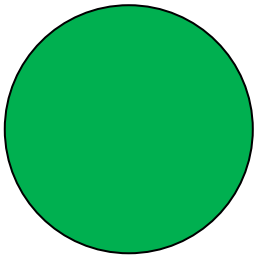
Then it can be concluded that a flat shape is a two-dimensional geometric object that lies on a flat plane and is bounded by straight or curved lines and has two elements, namely length and width.

1. Flat shapes

Flat shapes are as follows:

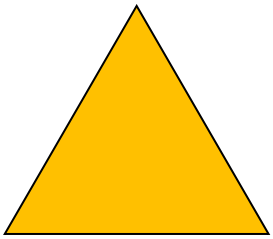
a. Circle

circle is a special simple closed curve. Every point is equal, if it has the same distance from a point called the center of the circle. The distance of the point is called the radius and the center line of the circle is called the diamater.



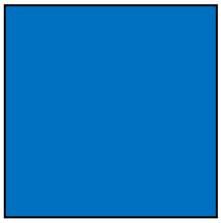
b. triangel

a flat shape that is bounded by three sides and has three angles.



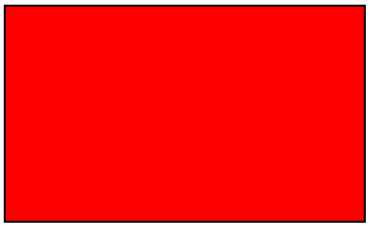
c. square

It is a flat shape that has four sides and four corners. All four sides are equal in length and all four corners are right-angled.



d. rectangle

A rectangle is a quadrilateral that has two pairs of equal sides and all four corners are right-angled.



A. Picture media

The definition of media in the teaching and learning process tends to be interpreted as graphic, photographic, or electronic tools to capture, process and reconstruct visual or verbal information (Azhar, 2010).

The complexity of the lessons to be delivered to students can be simplified with the help of the media. Media can represent what the teacher is less able to say through certain words or sentences. Even abstractness can be concretized with the presence of media.

Picture media is one of the effective teaching aids to stimulate students in learning speaking aspects. Before the picture media is used as a learning tool, what must be prepared is to arrange the pictures in an organized manner so that they are easy to use at the right time.

An image is something that is realized visually in two-dimensional form as an outpouring or thought. Images that can be used as learning media are paintings, illustrations, advertisements, cartoons, portraits, caricatures, and serialized images.

So it can be concluded that the use of image media can make it easier for students in learning mathematics in understanding flat help.

B. Purpose of picture media

As a tool in learning activities that provide visual experiences to children to encourage learning motivation and simplify complex and abstract concepts to be simpler, concrete and easy to understand.

So it can be concluded that image media is a visual medium that can facilitate the achievement of goals and can attract and stimulate students' attention so that they can concentrate on the content of related lessons.

C. benefits of picture media

The benefits of image media as learning media according to Subana (1998: 322), including:

1. Facilitate student understanding / understanding.
2. Enlarge or clarify important / small parts so that they can be observed.
3. Facilitate understanding that is abstract in nature.
4. Bring out the attraction in students.
5. Shorten a description, information that is clarified with words may require a long description.

So it can be concluded that the benefits of image media facilitate and clarify student understanding in something important or what the teacher wants to convey to students.

D. Picture media

With image media it can clarify an understanding to students and will automatically pay attention to lessons and be motivated in learning. The steps taken at this stage are:

1. Warming up the group
2. Has participation
3. Putting together a picture
4. Setting up observers
5. Steps to prepare drawing tools
6. Discussion and evaluation steps
7. Steps for drawing flat shapes
8. Discussion and evaluation step again
9. Experience and generalization step

E. Advantages of Picture Media

Pictures for students with moderate disabilities are very important learning, if they can understand them then the learning material for flat buildings can be easily understood, and by itself their learning achievements can be achieved without any burdensome difficulties.

RESULTS AND DISCUSSION

Results

Based on the research results, it can be seen that the learning process using picture media has improved in each cycle. These results are described in Table 3 below.

Table 3

Improved Learning Outcomes

No	Child Name	KBM	Cycle I	Cycle II	P1
1	Student 1	65	77,50	85,00	7,50
2	Student 2	65	75,00	80,00	5,00
3	Student 3	65	65,00	75,00	10,00
4	Student 4	65	60,00	70,00	10,00
5	Student 5	65	55,00	65,00	10,00
Highest Grade			77,50	85,00	7,50
Lowest Score			55,00	65,00	10,00
Total			332,50	375,00	92,500
Average Score			66,50	75,00	8,50
Achievement of KBM (Number)			3	5	
KBM Achievement (%)			60 %	100 %	
P1 KBM (Cycle II-Cycle I)				40 %	

Table 3 above shows that learning activities with picture media that have been implemented in class IV SDLB tunagrahita students at SLB Negeri 2 Centra PK-PLK Cimahi City show an increase in the :

The average class score from Cycle I of 60.00 to 100.00 in Cycle II or an increase in the average class score of 40.00 points from a rating scale of 0-100.

Achievement of KBM scores by 40%, from 60% in Cycle I to 100% in Cycle III.

Discussion

1. **Cycle I**

a. Planning stage

At this stage the researcher prepares learning tools consisting of lesson plan 1, worksheet 1, test question 1 and supporting learning media.

b. Activity and implementation phase

The implementation of teaching and learning activities for Cycle I was carried out in the fourth week of July 2018 in class IV SDLB Tunagrahita with 5 students. In this case the researcher acted as a teacher. Observation (observation) was carried out simultaneously with the implementation of teaching and learning.

At the end of the learning activity, students were given test 1 with the aim of knowing the level of student success during the teaching and learning process that had been carried out. The instrument used was test 1.

c. Description of Cycle I action results

Cycle 1 consisted of 2 meetings with an allocation of time per meeting of 2 lesson hours (2 x 35 minutes). The complete description of the results of the first and second meetings of Cycle I is described in table 1 below.

Table 1

Recapitulation of Cycle I Learning Outcomes First & Second Meeting

No	Child's Name	KBM	Meeting Value		∑	Average	Description	
			1	2			Completed	Not yet
1	Student 1	65	75	80	155	77,50	Completed	
2	Student 2	65	75	75	150	75,00	Completed	
3	Student 3	65	65	65	130	65,00	Completed	
4	Student 4	65	60	60	120	60,00		Not yet
5	Student 5	65	55	55	110	55,00		Not yet
Highest Grade			75	80	155	77,50		
Lowest Score			55	55	110	55,00		
Total			330	335	665	332,50	3	2
Percentage							60%	40%
Average Value			66,00	67,00	133	66,50		
Improvement Meeting 1-2			1,00					

Table 1 above shows that the level of achievement of learning outcomes during learning with picture media through question answers Cycle I has not shown maximum results. Partial data shows an increase in learning outcomes from the first to second meeting data by 1.00 points from the lowest class score of 66.00 to 67.00.

However, after being analyzed cumulatively, the average value of Cycle I from the first and second meetings is the highest score of 77.50, the lowest score is 55.00, the class average value is 66.50 and the achievement of KBM 65 is 3 people (60%) from a total of 5 students. However, cumulatively the learning outcomes of students have not been in accordance with the research success indicators but at least the image media through question answers has a good influence on student learning outcomes seen partially.

In short, the learning outcomes of Cycle I are not in accordance with the research indicator of 85%. Students reached KBM of 65, which only reached 60%.

The non-achievement of learning success indicators is certainly related to several weaknesses that existed during learning in Cycle I, the first and second meetings. Other findings in Cycle I as expressed by the observer are:

a. Class conditions are not yet conducive.
b. Students who do not understand thoroughly about learning math using picture media.

From the description described by the researcher above, it is still not optimal learning with the image media implemented. Therefore, it is necessary to improve learning in Cycle II. Researchers in this case provide a reflection on the weaknesses that are owned during Cycle I learning activities to be applied next as described below.

a. Researchers tried to 1) provide reinforcement both verbally and non-verbally for students who did not understand the material provided, 2) conduct supervision so that students focus on the tasks in the form of pictures being discussed.
b. To increase a deep understanding of mathematics, researchers continue to encourage students to be serious in improving carrying out tasks with image media using simple but accurate (directed) language.

2. Cycle II

a. Planning stage

At this stage the researcher prepares learning tools consisting of lesson plan 2, worksheet 2, test question 2 and supporting learning media.

b. Activity and implementation phase

The implementation of teaching and learning activities for Cycle II was carried out in the fourth week of July 2018 in class IV SDLB tunagrahita with 5 students. In this case the researcher acted as a teacher. Observation (observation) was carried out simultaneously with the implementation of teaching and learning.

At the end of the learning activity, students were given test 2 with the aim of knowing the level of student success during the teaching and learning process that had been carried out. The instrument used was test 2.

c. Description of Cycle II action results

Cycle II was carried out for 2 meetings with an allocation of time per meeting of 2 lesson hours (2 x 35 minutes). An overview of the results of Cycle II actions consisting of the third and fourth meetings as presented in Table 2 below.

Table 2

Recapitulation of Cycle II Learning Outcomes Third & Fourth Meeting

No	Child's Name	KBM	Meeting Value		∑	Average	Description	
			5	6			Completed	Not yet
1	Student 1	65	80	90	170	85	Completed	
2	Student 2	65	75	85	160	80	Completed	
3	Student 3	65	75	75	150	75	Completed	
4	Student 4	65	70	70	140	70	Completed	
5	Student 5	65	65	65	130	65	Completed	
Highest Grade			80	90	170	85		
Lowest Score			65	65	130	65		
Total			365	385	750			
Percentage							100%	
Average Score			73	77	150	75		
Improvement Meeting 3-4			4,00					

Table 2 above explains that the level of achievement of learning outcomes during learning by using image media in Cycle II is classified as very good, showing an increase in learning outcomes from the third and fourth meetings by 4.00 points from the class average score of 73.00 to 77.00. While the cumulative analysis of the average value of Cycle II from the third and fourth meetings, namely the highest score of 85.00, the lowest score of 65.00, the class average value of 75.00 and the achievement of KBM 65 as many as 5 people (100%) of the total 5 students. This data shows that the research success indicators have been achieved (mastery learning) and in accordance with the predetermined learning success indicators.

The explanation above shows that the learning outcomes of Cycle II reached 100% or it can be said that the research indicator of 85% of students with a KBM of 65.00 was exceeded and achieved very well.

The achievement of learning success indicators cannot be separated from the efforts made by the teacher in Cycle II learning. The two reflections taken from the end of Cycle I and Cycle II learning to improve learning activities are:

1. Teachers classify students of class IV SDLB tunagrahita in SLB Negeri 2 Centra PK-PLK Cimahi City based on the level of intelligence which is then applied in learning, namely each group member consists of 20% of students with above-average predicates and the remaining 80% are below average.

2. Researchers added to math learning to provide a deep understanding of the material taught.

These results have reached the level of perfection in learning. Thus the researcher decided to stop the action in Cycle II.

CONCLUSION

Based on the findings of learning improvement seen from the view of the results of description and reflection in improving the ability of tunagrahita students in understanding mathematics through picture media in class IV SDLB tunagrahita in SLB Negeri 2 Centra PK-PLK Cimahi City can be concluded.

Efforts to improve math learning through image media in particular have shown quite good results as expected. This can be seen from the average value of the assessment results in each cycle of learning improvement actions, namely 60% in Cycle I, then increased in Cycle II to 100%.

This increase is done through effective planned learning planning for students with disabilities that has a clear improvement after being adjusted to the analysis and reflection of previous learning. To develop core competencies and basic competencies regarding the material of each mastery of mathematics mastered in class IV SDLB tunagrahita SLB Negeri 2 Centra PK-PLK Cimahi City.

Based on the explanation above, it is expected that both the indicators of learning success, learning objectives, learning improvement objectives, learning materials, learning steps, learning facilities and resources and learning assessment are aligned in improving the quality of student learning from each cycle.

The implementation of learning refers to the lesson plan that has been determined, then the assessment activities are carried out according to the plan to see the ability of students with disabilities as a result of the implementation of learning. While the activities of teachers and students of grade IV SDLV in the implementation of learning although felt not yet optimal but

has shown efforts to improve the ability of students of grade IV SDLB in understanding math learning through image media.

ACKNOWLEDGMENTS

Although it is felt that the learning improvement has not been maximized, it is hoped that in the future, grade IV SDLB students in learning mathematics through picture media will improve optimally, therefore it needs to be done:

1. The material provided about math must interest students.
2. The implementation of mathematics learning through image media must be able to activate fourth grade SDLB students with a pleasant classroom atmosphere.
3. Math learning activities are assessed authentically and lead to recognizing flat shapes.

This suggestion can change the paradigm of teachers in teaching and educating in schools in order to overcome learning problems and develop their profession, then the results of this learning improvement can be socialized through the activities of the Teacher Working Group (KKG) and Principal Working Group (KKKS) in Group VII / 3 Cimahi City.

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